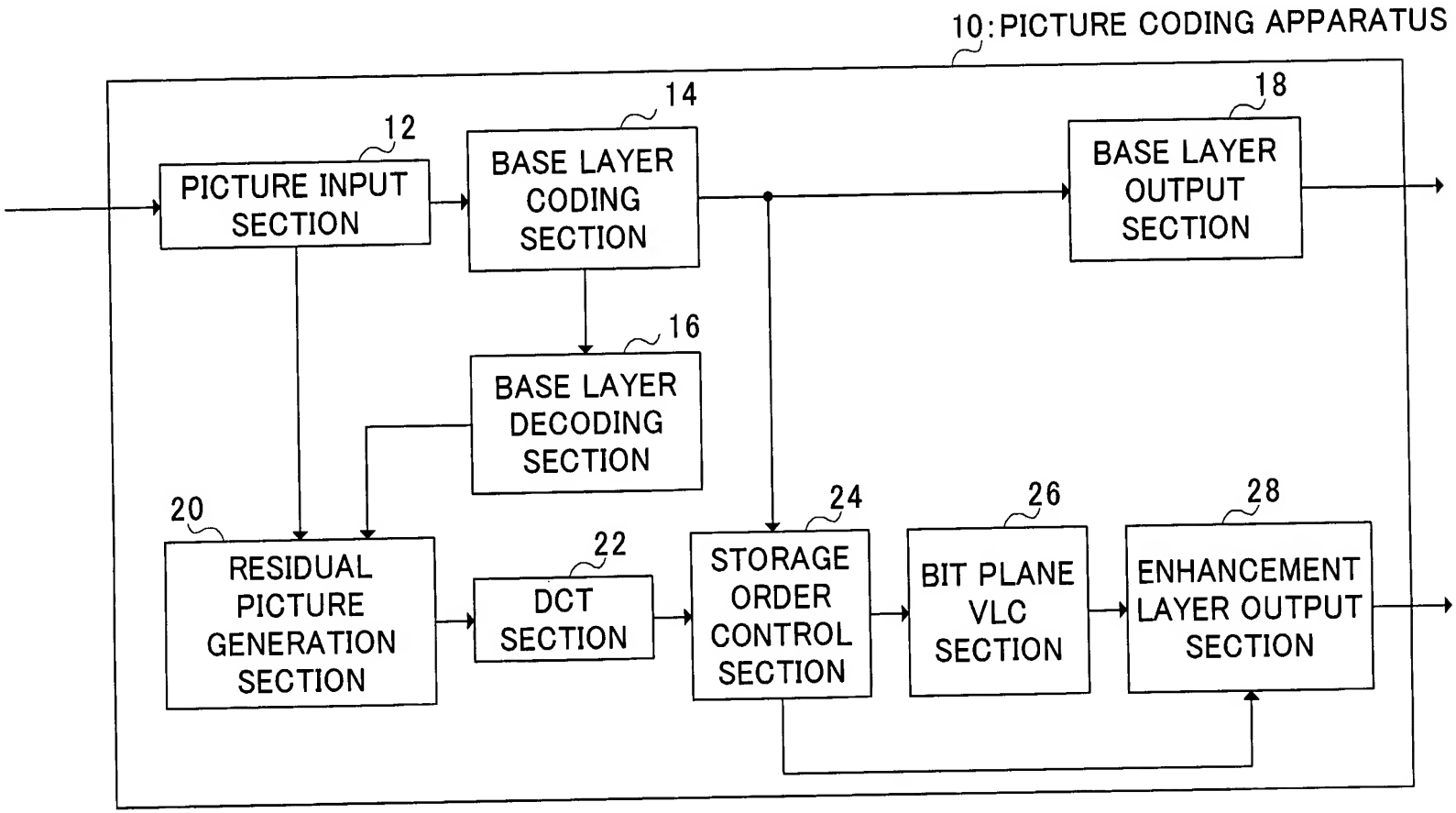


PRIOR ART

FIG.1

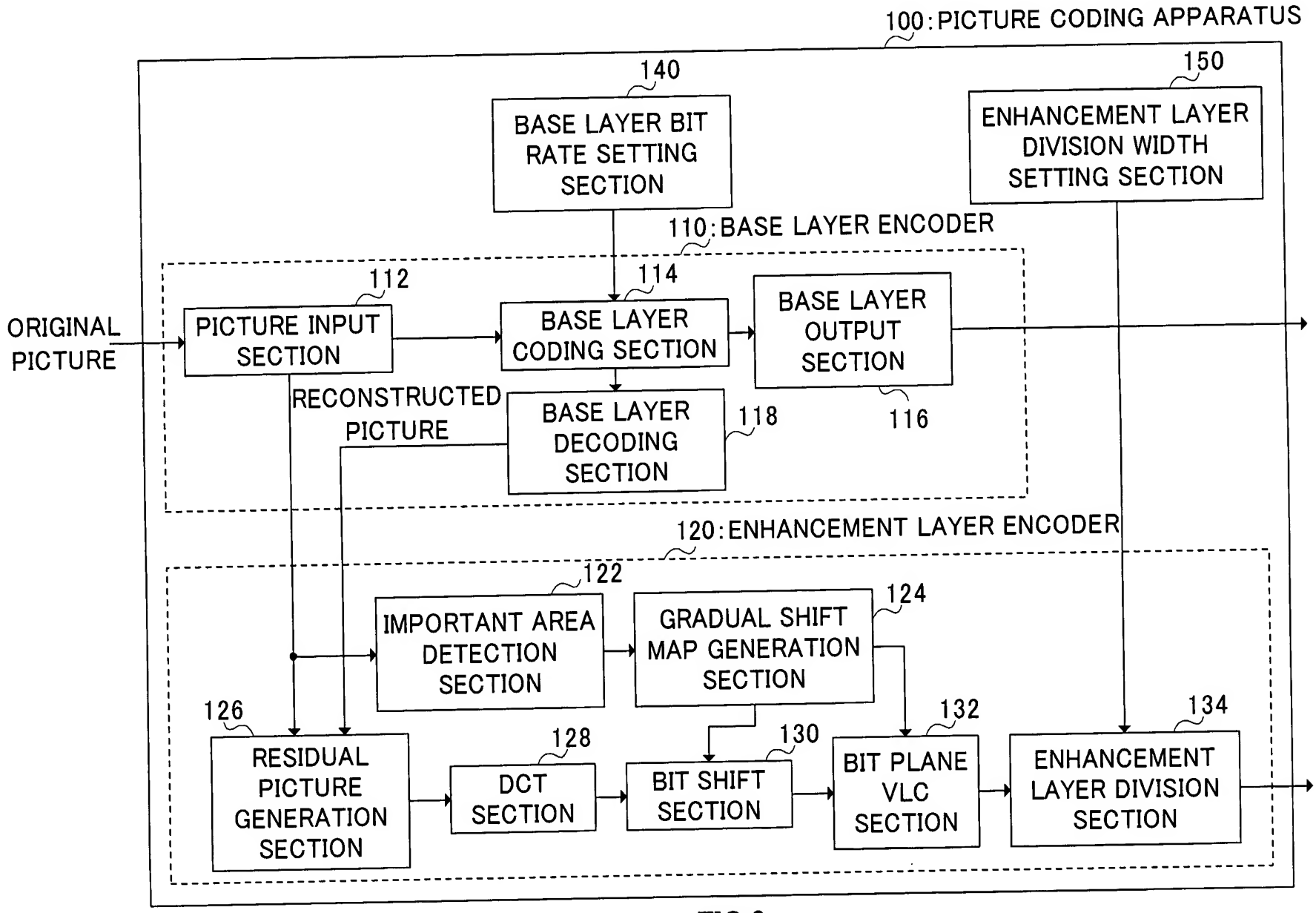

100:PICTURE CODING APPARATUS
140
BASE LAYER BIT RATE SETTING SECTION
150
ENHANCEMENT LAYER DIVISION WIDTH SETTING SECTION
110:BASE LAYER ENCODER
112
114
ORIGINAL PICTURE
PICTURE INPUT SECTION
BASE LAYER CODING SECTION
BASE LAYER OUTPUT SECTION
116
RECONSTRUCTED PICTURE
BASE LAYER DECODING SECTION
118
120:ENHANCEMENT LAYER ENCODER
122
IMPORTANT AREA DETECTION SECTION
124
GRADUAL SHIFT MAP GENERATION SECTION
126
RESIDUAL PICTURE GENERATION SECTION
128
DCT SECTION
130
BIT SHIFT SECTION
132
BIT PLANE VLC SECTION
134
ENHANCEMENT LAYER DIVISION SECTION

FIG.2

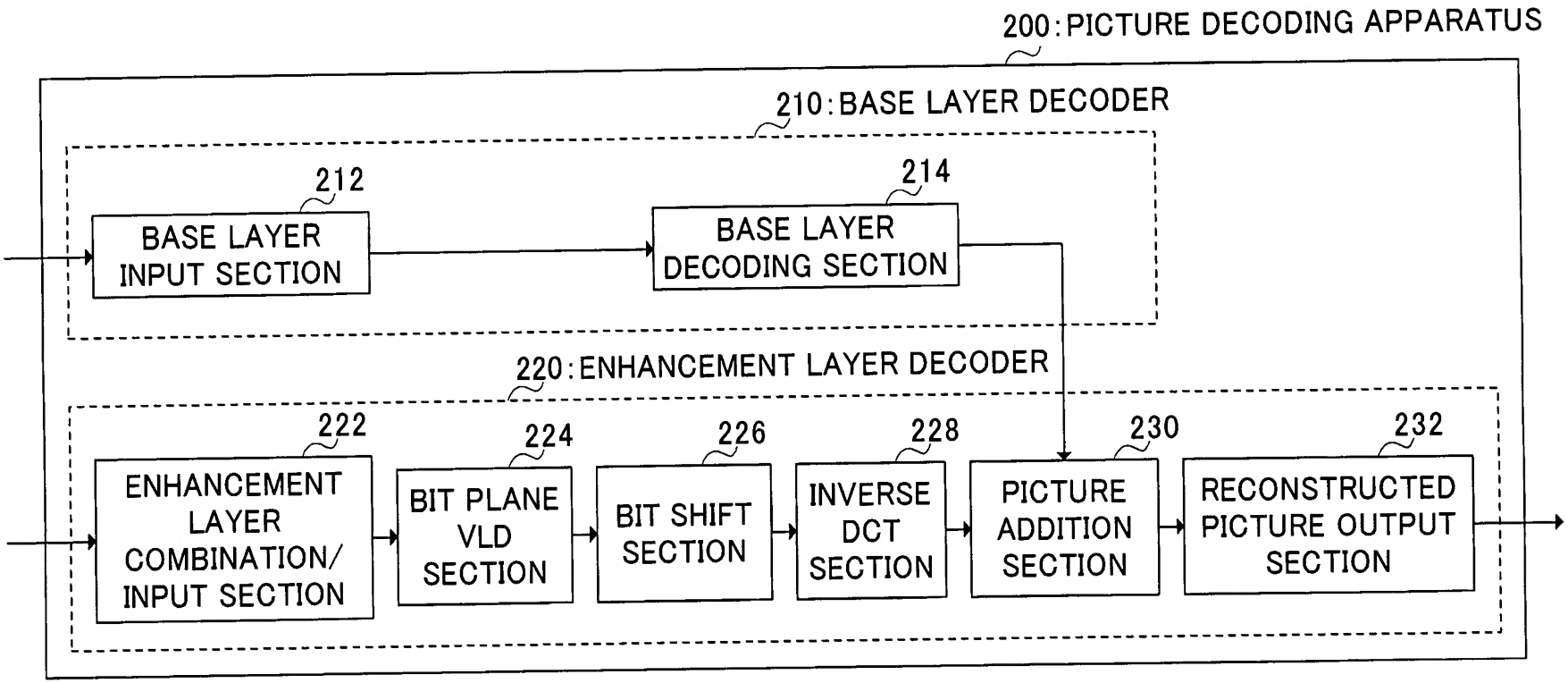

200:PICTURE DECODING APPARATUS
210:BASE LAYER DECODER
212
BASE LAYER INPUT SECTION
214
BASE LAYER DECODING SECTION
220:ENHANCEMENT LAYER DECODER
222
ENHANCEMENT LAYER COMBINATION/ INPUT SECTION
224
BIT PLANE VLD SECTION
226
BIT SHIFT SECTION
228
INVERSE DCT SECTION
230
PICTURE ADDITION SECTION
232
RECONSTRUCTED PICTURE OUTPUT SECTION

FIG.3

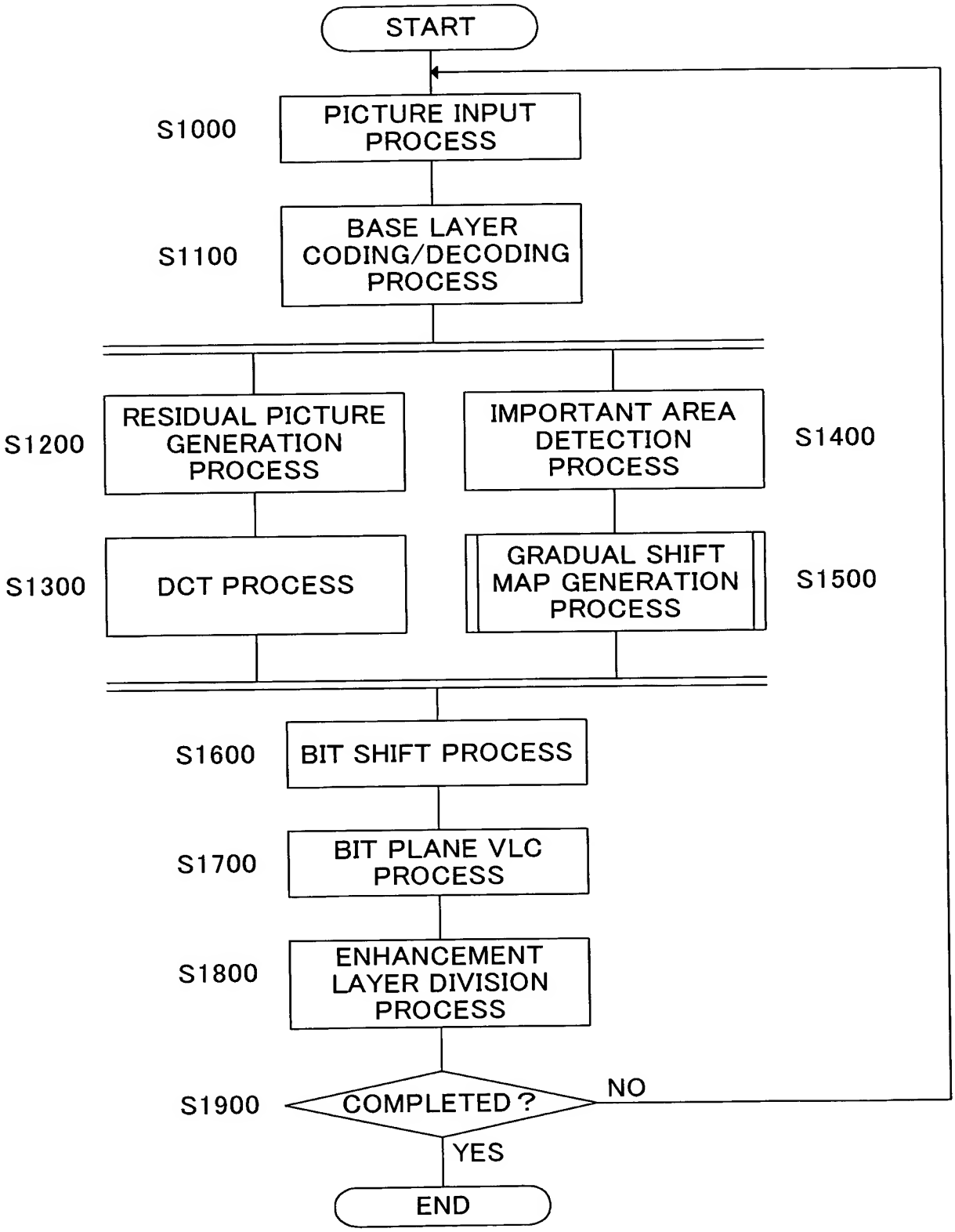

START
S1000
PICTURE INPUT PROCESS
S1100
BASE LAYER CODING/DECODING PROCESS
S1200
RESIDUAL PICTURE GENERATION PROCESS
S1400
IMPORTANT AREA DETECTION PROCESS
S1300
DCT PROCESS
S1500
GRADUAL SHIFT MAP GENERATION PROCESS
S1600
BIT SHIFT PROCESS
S1700
BIT PLANE VLC PROCESS
S1800
ENHANCEMENT LAYER DIVISION PROCESS
S1900
COMPLETED ?
NO
YES
END

FIG.4

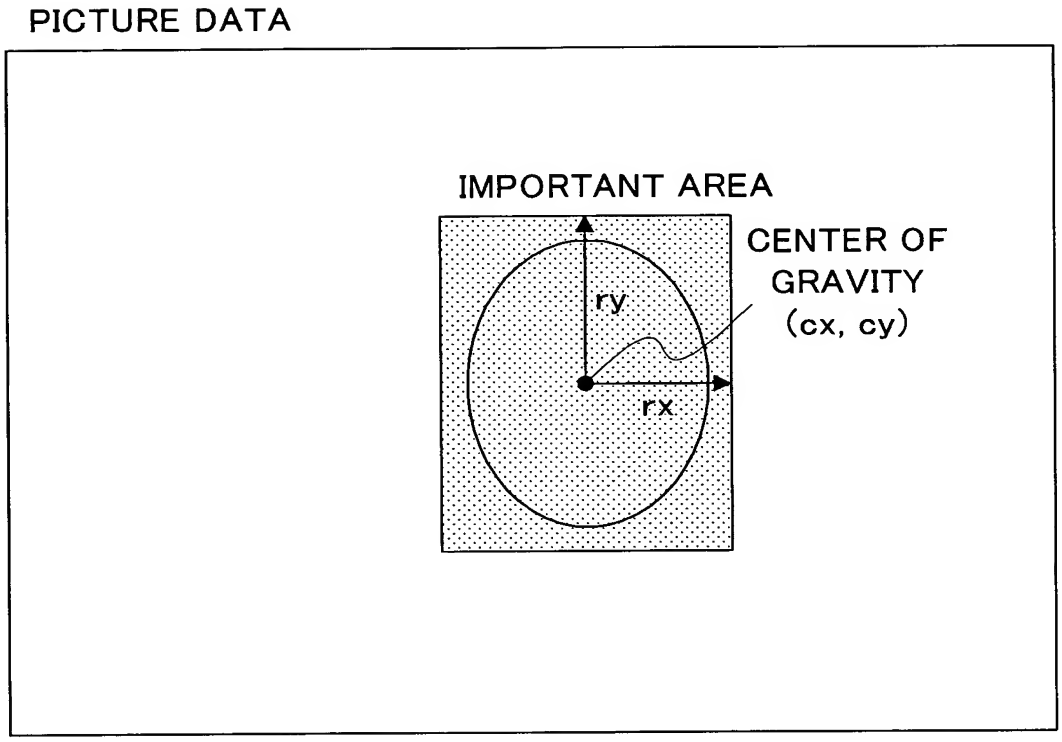


FIG.5

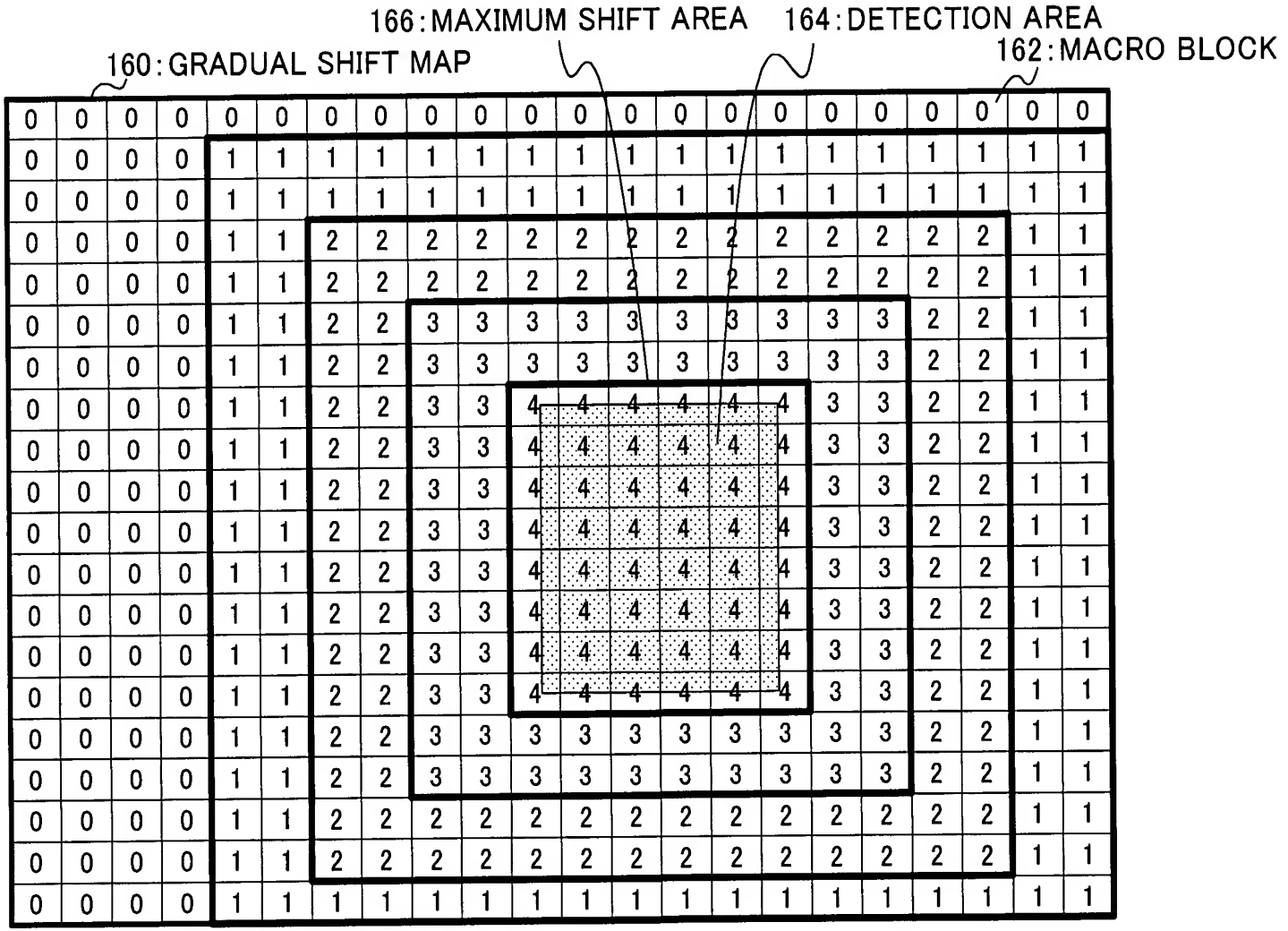

166 : MAXIMUM SHIFT AREA
164 : DETECTION AREA
160 : GRADUAL SHIFT MAP
162 : MACRO BLOCK

FIG.6

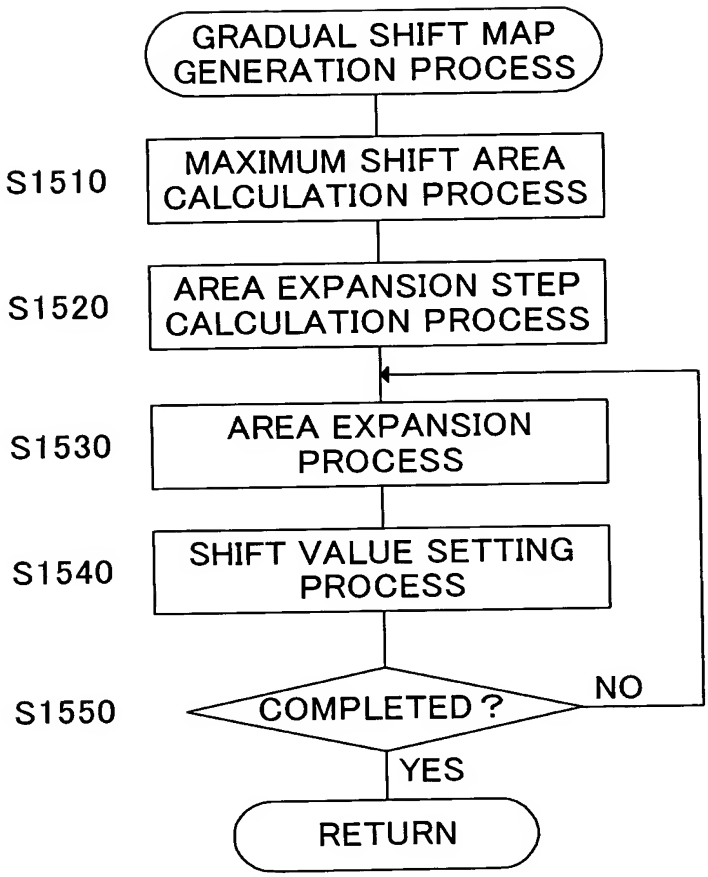

GRADUAL SHIFT MAP GENERATION PROCESS
S1510
MAXIMUM SHIFT AREA CALCULATION PROCESS
S1520
AREA EXPANSION STEP CALCULATION PROCESS
S1530
AREA EXPANSION PROCESS
S1540
SHIFT VALUE SETTING PROCESS
S1550
COMPLETED ?
NO
YES
RETURN

FIG.7

GRADUAL SHIFT MAP

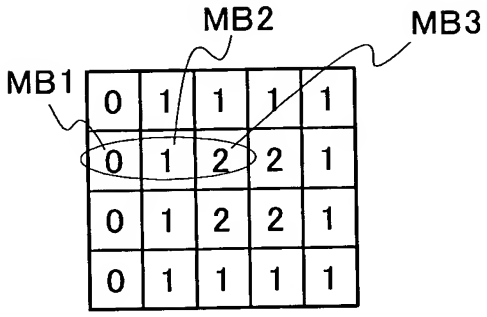


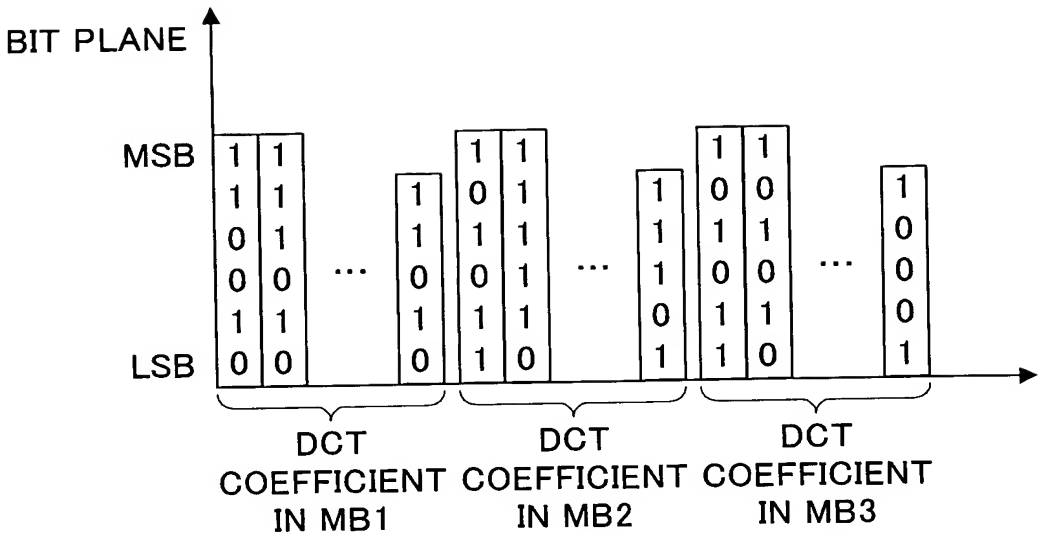
FIG.8A

DCT COEFFICIENT OF MB1
(BINARY NOTATION)

110010	111010	...	...
...	...	...	...
...	...	...	11010

FIG.8B

FIG.8C


BIT PLANE
MSB
LSB
DCT COEFFICIENT IN MB1
DCT COEFFICIENT IN MB2
DCT COEFFICIENT IN MB3

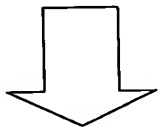
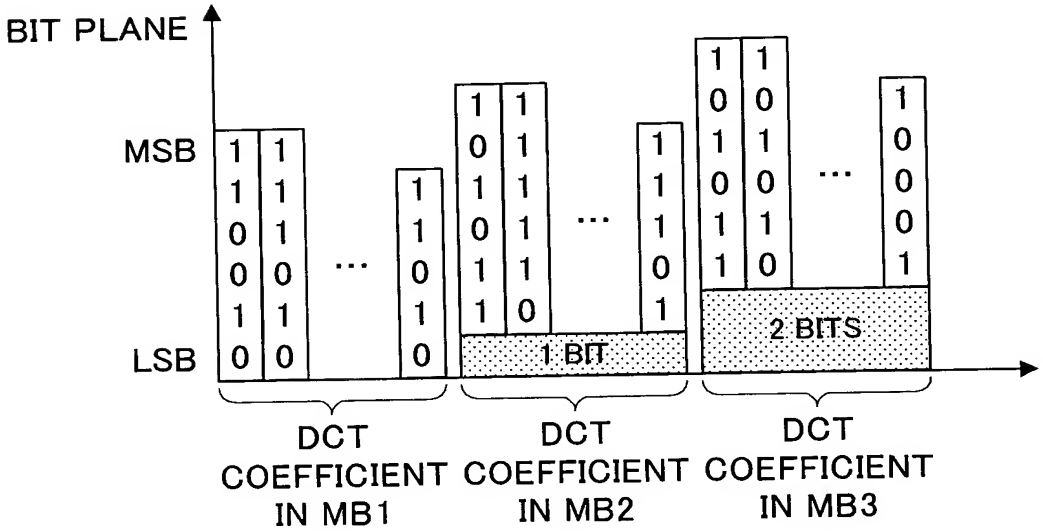

BIT SHIFT

FIG.8D


BIT PLANE
MSB
LSB
1 BIT
2 BITS
DCT COEFFICIENT IN MB1
DCT COEFFICIENT IN MB2
DCT COEFFICIENT IN MB3

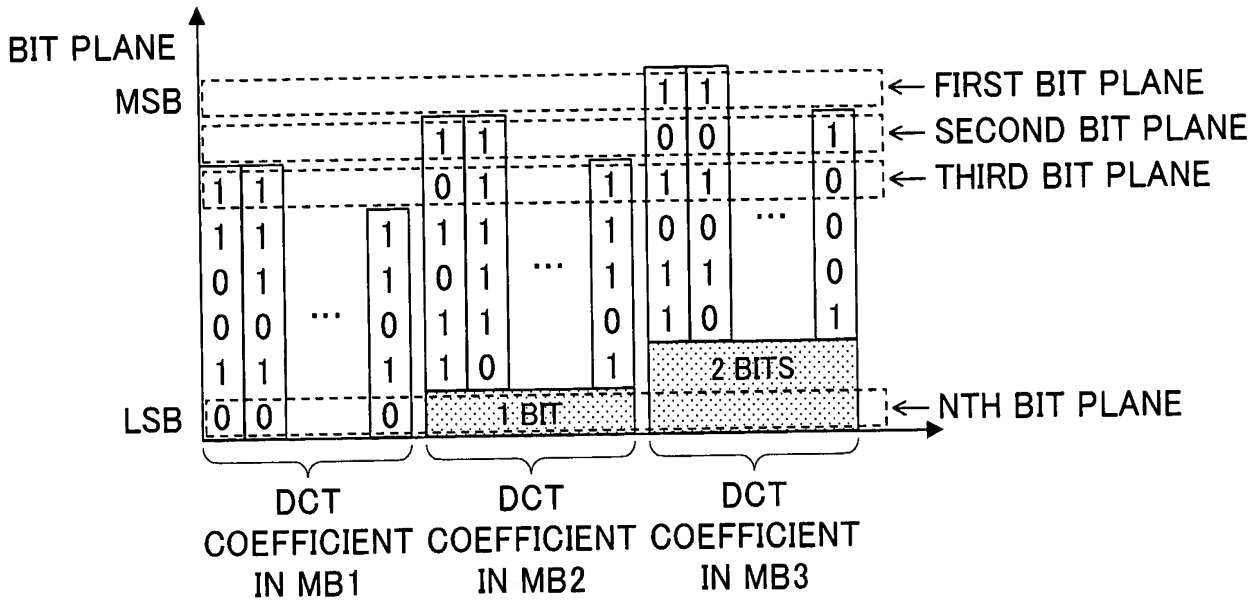

BIT PLANE
MSB
LSB
FIRST BIT PLANE
SECOND BIT PLANE
THIRD BIT PLANE
NTH BIT PLANE
2 BITS
1 BIT
DCT COEFFICIENT IN MB1
DCT COEFFICIENT IN MB2
DCT COEFFICIENT IN MB3

FIG.9

ENHANCEMENT LAYER BIT STREAM

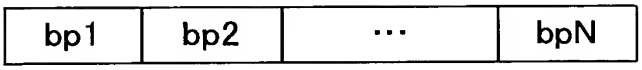


FIG.10

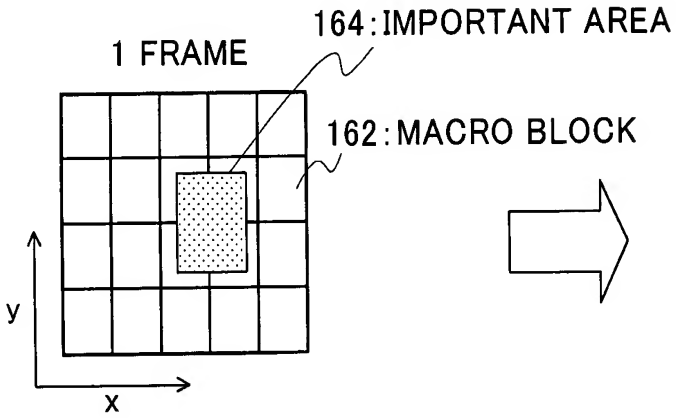


FIG.11A

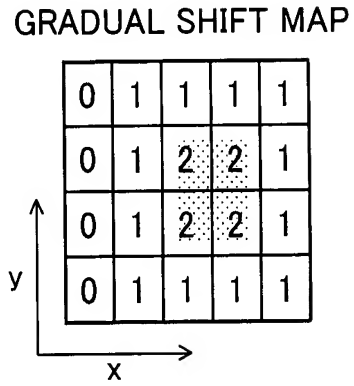


FIG.11B

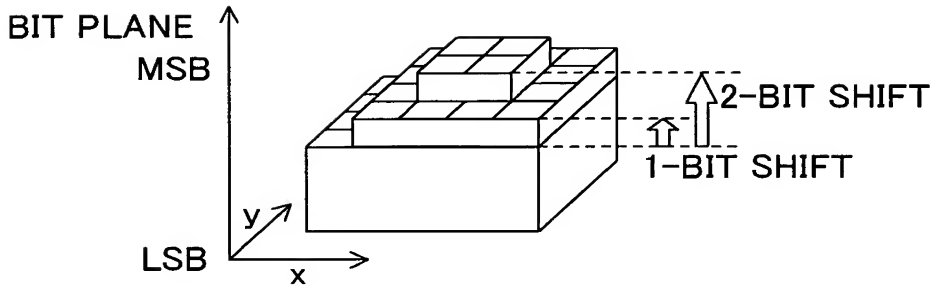


FIG.12

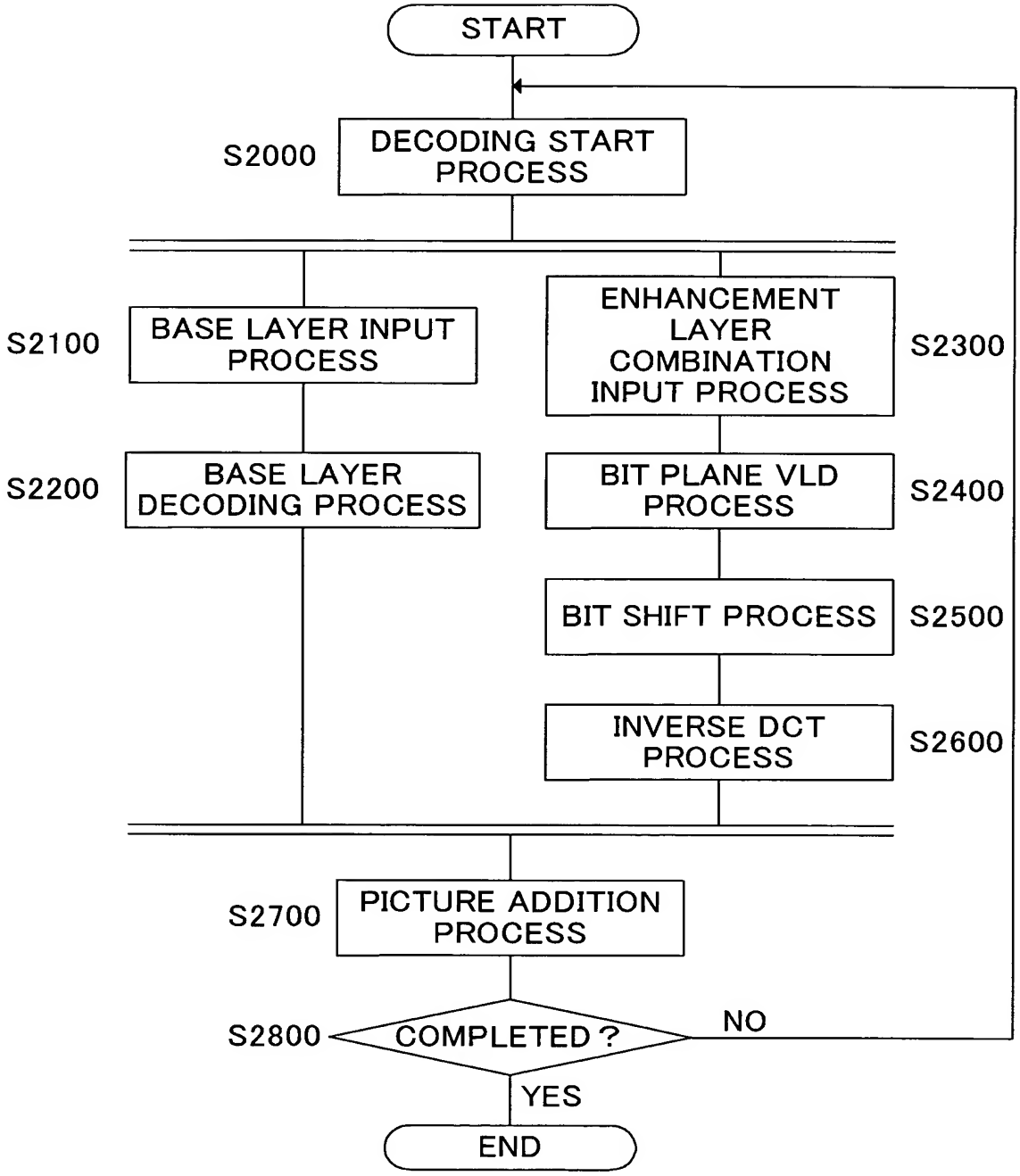

START
S2000
DECODING START PROCESS
S2100
BASE LAYER INPUT PROCESS
S2200
BASE LAYER DECODING PROCESS
ENHANCEMENT LAYER COMBINATION INPUT PROCESS
S2300
BIT PLANE VLD PROCESS
S2400
BIT SHIFT PROCESS
S2500
INVERSE DCT PROCESS
S2600
S2700
PICTURE ADDITION PROCESS
S2800
COMPLETED ?
NO
YES
END

FIG.13

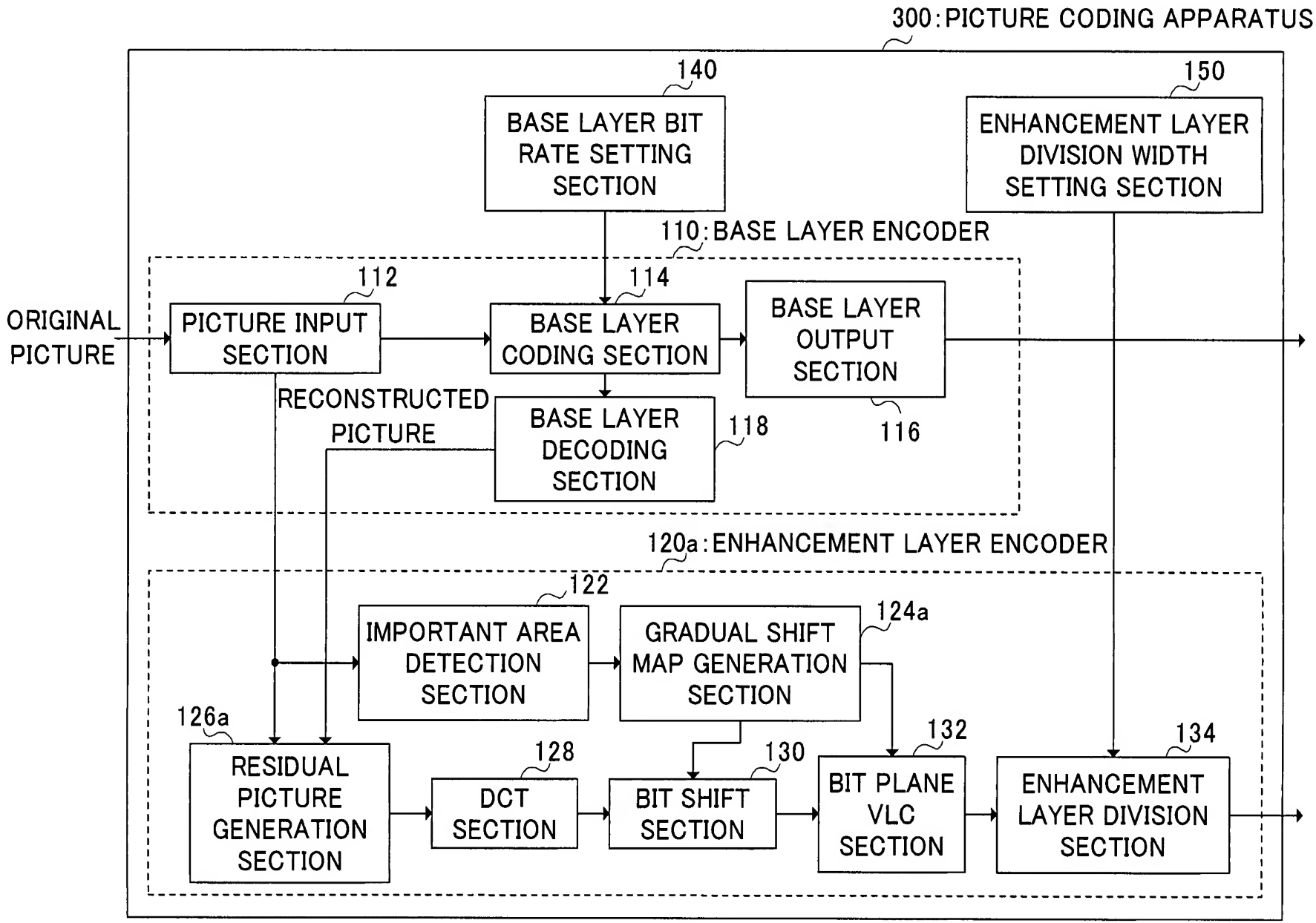

300:PICTURE CODING APPARATUS
140
BASE LAYER BIT RATE SETTING SECTION
150
ENHANCEMENT LAYER DIVISION WIDTH SETTING SECTION
110:BASE LAYER ENCODER
112
114
ORIGINAL PICTURE
PICTURE INPUT SECTION
BASE LAYER CODING SECTION
BASE LAYER OUTPUT SECTION
116
RECONSTRUCTED PICTURE
BASE LAYER DECODING SECTION
118
120a:ENHANCEMENT LAYER ENCODER
122
IMPORTANT AREA DETECTION SECTION
124a
GRADUAL SHIFT MAP GENERATION SECTION
126a
RESIDUAL PICTURE GENERATION SECTION
128
DCT SECTION
130
BIT SHIFT SECTION
132
BIT PLANE VLC SECTION
134
ENHANCEMENT LAYER DIVISION SECTION

FIG.14

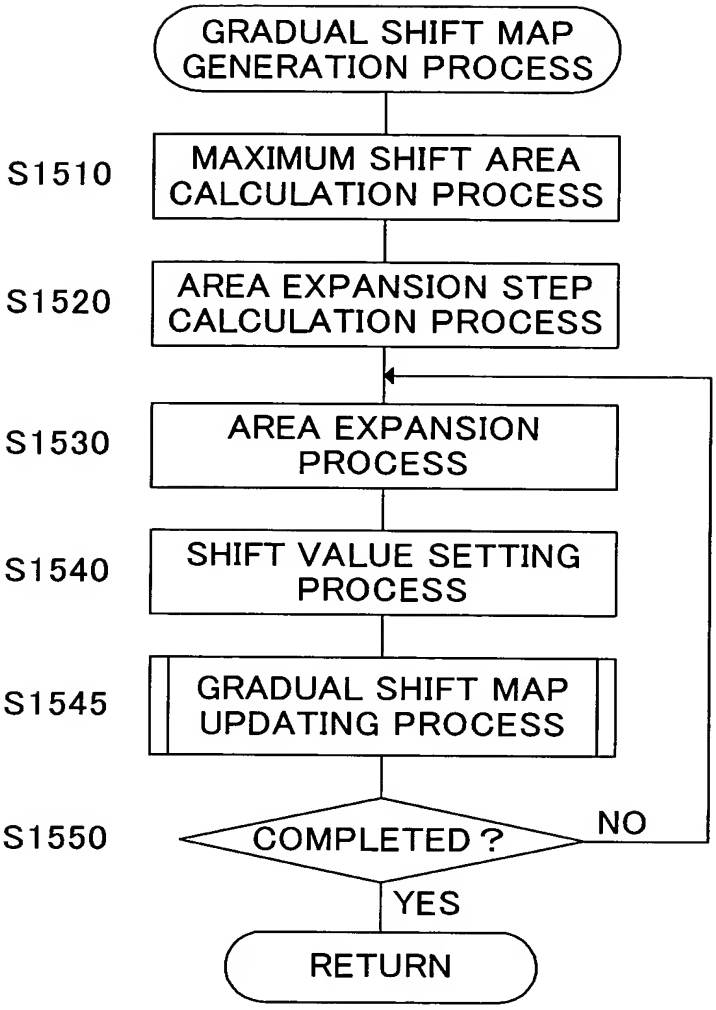

GRADUAL SHIFT MAP GENERATION PROCESS
S1510
MAXIMUM SHIFT AREA CALCULATION PROCESS
S1520
AREA EXPANSION STEP CALCULATION PROCESS
S1530
AREA EXPANSION PROCESS
S1540
SHIFT VALUE SETTING PROCESS
S1545
GRADUAL SHIFT MAP UPDATING PROCESS
S1550
COMPLETED ?
NO
YES
RETURN

FIG.15

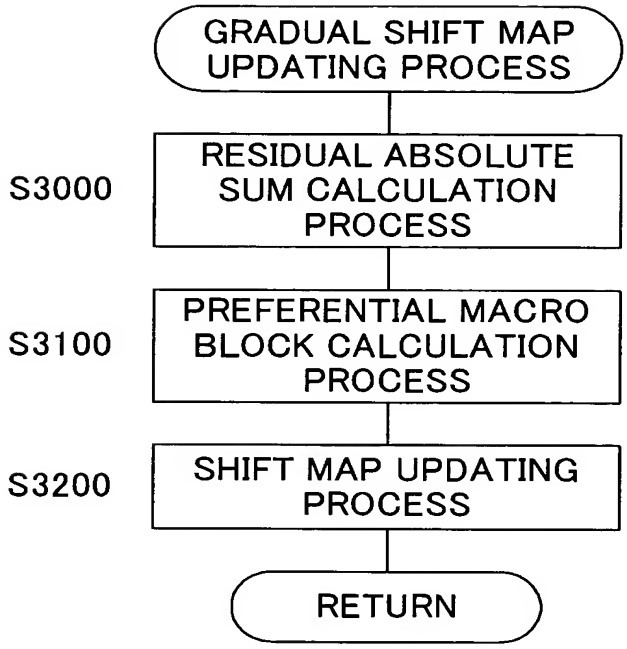

GRADUAL SHIFT MAP UPDATING PROCESS
S3000
RESIDUAL ABSOLUTE SUM CALCULATION PROCESS
S3100
PREFERENTIAL MACRO BLOCK CALCULATION PROCESS
S3200
SHIFT MAP UPDATING PROCESS
RETURN

FIG.16